AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1. (Previously Presented) A method for producing metal/metalloid oxide particles comprising rare earth metals, the method comprising reacting a reactant stream in a gas flow, the reactant stream comprising a rare earth metal precursor and an oxygen source wherein the reaction is driven by energy from a light beam, and wherein the resulting metal/metalloid oxide particles have less than about 10 mole percent of the metal being rare earth metal.

2. (Original) The method of claim 1 wherein the light beam is an infrared laser beam.

3. (Original) The method of claim 1 wherein the reactant stream comprises an aerosol with droplets comprising metal solutions.

4. (Original) The method of claim 3 wherein the metal solutions comprise non-rare earth metal ions and rare earth metal ions.

5. (Original) The method of claim 3 wherein the solution are aqueous solutions.

6. (Original) The method of claim 3 wherein the solution comprises nitrate ions.

7. (Original) The method of claim 3 wherein the solution comprises ammonium ions.

8. (Original) The method of claim 1 wherein the reactant stream comprises a non-rare earth metal/metalloid precursor.

9. (Original) The method of claim 8 wherein the rare earth metal oxide particles comprise rare earth doped metal oxide particles.

10. (Original) The method of claim 8 wherein the rare earth metal oxide particles comprise a stoichiometric amount of rare earth metal.

11. (Original) The method of claim 1 wherein the oxygen source comprises O_2.

12. (Original) The method of claim 1 wherein the reactant stream comprises a non-rare earth metal/metalloid selected from the group consisting of aluminum, manganese, silver, yttrium, zinc, magnesium, vanadium, silicon, boron, strontium, and barium.

13. (Original) The method of claim 1 wherein the rare earth metal comprises europium, cerium, terbium, gadolinium, thulium, praseodymium or erbium.

14. (Original) The method of claim 1 wherein the reactant stream further comprises a non-metal composition that absorbs infrared light.

15. (Cancelled)

16. (Currently Amended) A method of making a collection of metal/metalloid sulfides particles in a powder with an average particle size of less than about 500 nm, the method comprising contacting metal/metalloid oxide particles in a powder with H_2S or CS_2 at a temperature below the melting temperature of the metal/metalloid oxide particles and the metal/metalloid sulfide particles, wherein the metal/metalloid oxide particles have an average particle size under 500 nm and wherein the powders are stirred in a closed container and reactant gases are flowed through the container.

17. (Original) The method of claim 16 wherein the temperature is less than about 400°C.

18. (Currently Amended) A collection of rare earth doped metal/metalloid sulfide particles having an average particle size from about 35 nm to about 250 nm having a degree of crystallinity that results in crystal facets along the surface of the particles.

19. (Original) The collection of particle of claim 18 comprising ZnS.

20. (Original) The collection of particles of claim 18 wherein the particles comprise no more than about 10 mole percent rare earth metal relative to the total metal composition.

21. (Previously Presented) The collection of particle of claim 18 wherein having an average particle size from about 35 nm to about 100 nm.

22. (Previously Presented) The collection of particle of claim 18 wherein essentially no particles have a diameter greater than about 5 times the average particle size.

23. (Previously Presented) The collection of particles of claim 18 wherein at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 225 percent of the average diameter.

24. (Previously Presented) The collection of particles of claim 18 wherein the rare earth metal comprises europium.

25. (Previously Presented) The collection of particles of claim 18 comprising SrS.

26. (Previously Presented) The collection of particles of claim 25 wherein the rare earth dopant comprises Ce.

Please add new claims 27-37 as follows:

27. (New) The method of claim 16 wherein the metal/metalloid oxide is contacted with H_2S.

28. (New) The method of claim 16 wherein the metal/metalloid oxide is contacted with C_2S.

29. (New) The method of claim 16 wherein the metal/metalloid oxide comprises a metal oxide.

30. (New) The method of claim 16 wherein the metal/metalloid oxide comprises a metalloid oxide.

31. (New) The method of claim 16 wherein the metal/meatlloid sulfide comprises ZnS

32. (New) The collection of particles of claim 18 wherein 95 percent of the primary particles have ratios of the dimension along the major axis to the dimension along the minor axis less than about 2.

33. (New) A collection of rare earth doped metal/metalloid sulfide particles having an average particle size from about 35 nm to about 250 nm wherein at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 225 percent of the average diameter.

34. (New) The collection of particle of claim 33 comprising ZnS.

35. (New) The collection of particles of claim 33 wherein the particles comprise no more than about 10 mole percent rare earth metal relative to the total metal composition.

36. (New) The collection of particle of claim 33 wherein having an average particle size from about 35 nm to about 100 nm.

37. (New) The collection of particle of claim 33 wherein essentially no particles have a diameter greater than about 5 times the average particle size.